Saskatchewan
Agriculture
and Food

Mare's Milk

Market Assessment

MARE'S MILK

Market Assessment

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Executive Summary

This report takes a look at the market opportunities for the production of mare's milk in Saskatchewan.

Mare's milk is used in several different products including Koumiss (fermented mare's milk) and cosmetics (soaps, lotions, ointments). It is also consumed directly by those who have allergies to cow's milk in some European countries.

A growing world-wide interest in fermented milks has made Koumiss gain some popularity on a more commercial basis. It seems to have found a niche in some health food outlets in parts of West Germany and Austria. Consumer awareness would have to be stimulated and test marketing would have to be performed to see if these markets exist in Canada. The same can be said for mare's milk as a cow's milk replacement.

Cosmetic use of mare's milk does not look positive for the North American market and should not be further pursued. Although somewhat popular in West Germany, mare's milk-based cosmetic products are simply not used in North America. General trends away from animal-based ingredients and superior substitutes currently on the market are the two primary reasons North American cosmetic companies are not using mare's milk as a cosmetic ingredient.

Production of mare's milk in Saskatchewan would be best implemented by making use of existing PMU operations. The idea is to put the mares to work during the summer giving milk. A potential problem with this type of operation is that year-round operations could be tiring on a mare and thus she could be prone to break down. Two issues would need to be addressed. The first is good management capability. This is necessary in order to run an efficient and effective operation and also to keep the animal rights activists satisfied. The other issue is finding labour force willing to do the work at a reasonable cost.

As for export of raw mare's milk, high transportation costs and short shelf life greatly reduce it's potential. No estimations could be obtained however, as direct contact with potential buyers would be needed for this information.

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1.0 Introduction

This report takes a look at market opportunities for the production of mares milk in Saskatchewan. The intended audience includes those interested in mare's milk production, in addition to those interested in marketing the product.

2.0 Composition

Compared to cow's milk, mare's milk is lower in fat and protein, higher in lactose, and fairly rich in oestrogen[1]. During pregnancy, oestrogen levels can reach as high as 2000 pg/ml (7). It is believed that mare's milk most closely resembles human milk (5).

3.0 Production

Production is either seasonal or year-round, depending on the operation. Milk yields can range from 2000 to 6000 litres in lactations lasting six to more than nine months. Each milking will yield approximately one half litre. Fluctuations are due primarily to differences in breed, feeding, management, etc. (1).

Milking begins approximately 20 days after foaling, beginning twice daily and gradually increased to six times daily over a period of eight to twelve days (1). Foals generally nurse their mothers the first 6 weeks before sharing with humans.

The milking of mares can often be a difficult task as mares are individualists and decide for themselves when and for how long they will be milked. Any unexpected noise or movement can cause the mare to dry up instantly.

3.1 Equipment

Alpha Laval of Sweden is currently experimenting with mare milking equipment in Holland and West Germany. A commercial version may be ready for release within two to three years. No other equipment information was obtained.

4.0 Products

Mare's milk is used in several different products including Koumiss (fermented mare's milk) and cosmetics (soaps, lotions, ointments). It is also consumed directly by those who have allergies to cow's milk in some European countries.

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1 *Oestrogen is a hormone which plays an important role in the metabolism of skin and hair*

4.1 Koumiss

A growing world-wide interest in fermented milks has made Koumiss gain some popularity on a more commercial basis. It is claimed to attribute special nutritional and therapeutic properties (2) which historically has made it popular in many parts of Europe and several regions of the now disbanded Soviet Union. Kokchatev, Kazakhstan in fact, holds an annual 'Koumiss convention' which showcases the latest in Koumiss production technology.

In addition to Koumiss being recognized as a healthy drink, it is also reported to be used in the treatment of tuberculosis (1.42 litres/day recommended) and diseases of the digestive tract, such as stomach and duodenal ulcers (1). Little scientific research has been done to back up these health claims however.

Koumiss is created by adding a small amount of previously fermented milk to fresh mare's milk and is agitated by stirring. Commercially, it can be produced with varying concentrations of alcohol and lactic acid, plus carbon dioxide. Koumiss can also be produced from separated cow's milk.

Market opportunities for Koumiss may exist in Canada. Just recently, an Austrian company made an inquiry into possibilities for export to Canada. A problem however, is that there are no real estimations on the size of this market.

Koumiss may find a niche in some health food outlets as is currently the case in West Germany and Austria. Distribution interest has been expressed by C. E. Jamieson in Toronto.

4.2 Cosmetics

Cosmetic use of mare's milk is currently centered in West Germany. As with Koumiss, there are no real estimations on the size of this market. Cosmetic companies contacted in both Canada and the United States have indicated they do not use mare's milk in any of their cosmetic products. All mentioned other substitutes for mare's milk which are viewed by industry as superior, both in cost and performance. Some of these alternatives include Alpha Hydroxyl Acid, Lactic Acid (need a prescription in the United States) and Glycolic Acids. All of these are seen as good moisturizers and are easily carried to the deeper layers of the skin.

Manufacturers of natural cosmetics also have substitutes, some of which include sugars and sorbitols, Aloe Vera and Jojoba.

According to Dr. Anne Graham, the problem with mare's milk is it's inability to work its way to the deeper layers of the skin. This is primarily due to it's molecular structure. As a result, mare's milk ends up sitting on the surface of the skin, never having a chance to be effective.

The other reason for mare's milk's absence in North American cosmetics is consumer demand. Cosmetic companies are moving away from animal based to plant based ingredients for the reason that animal based products are not generally thought of as being chemical free.

4.3 Pharmaceuticals

According to Health and Welfare Canada, mare's milk would fall under section F which would restrict it to only prescription drugs. If the oestrogen levels were low enough however, it may be allowed for use in over the counter drugs. At the present time, mare's milk is not used in the pharmaceutical industry as the oestrogen levels are not high enough for it to be of any use.

4.4 Cow's Milk Replacement

Allergies to cow's milk are common amongst many people throughout the world. As a cow's milk replacement, people in Canada generally drink goat's milk. In Germany however, mare's milk is often the replacement of choice.

Two different pediatricians were contacted regarding the potential for the Canadian market. Both indicated that there would likely be a reluctancy by the consumer to try the new product. Further research into this would have to be done.

If a market could be found, a central distributor with an existing network such as Ayerst would be in a prime position to distribute the product.

5.0 Regulations

5.1 Cosmetics

Section 15(b) in the Cosmetic Regulations Section of the Food and Drug Act states that "no producer or importer shall sell a cosmetic that contains an oestrogenic substance." Similar regulations exist in the United States. The same is also true for those countries which follow the Annex II of the EEC Directive. In this "negative list", oestrogen-based ingredients are listed.

The only way that mare's milk could be allowed for use in cosmetics then, would be to have a zero oestrogen level.

5.2 Food

Health and Welfare Canada have indicated no specific regulations regarding the use of mare's milk in food products. It can be consumed, however, medicinal claims cannot be made against it. This would result in it's classification as a drug. Strict regulations exist regarding labelling. Similar regulations also exist in the United States.

6.0 Prices

The current price for fresh, unprocessed mare's milk could not be obtained. 1990 prices however, indicate that fresh mare's milk sold for approximately $13/litre and special soaps which contain mare's milk retailed for about $45/kilogram in West Germany.

Prices for cosmetic samples which were obtained from Jurgen Rodau (West German Cosmetic Company) include:

- Stutenmilch-Schonheitsbad (Bath Oil; 250 ml) $29.50
- Stutenmilch-Reinigungs-Fluid (Facial Cleanser 150 ml) $15.16
- Stutenmilch-Spezialcreme (Facial Lotion 30 ml) - $27.86
- Stutenmilch-Plegelotion (Conditioner/Toner 150 ml) $31.95
- Stutenmilch-Nahrcreme (Night Cream 75 ml) $56.55
- Stm.-Kapseln (Nutritional Tablets; dehydrated Mare's milk 350 mg) $56.55

7.0 Export Potential

As for export of raw mare's milk, high transportation costs and short shelf life greatly reduce it's potential. No estimations could be obtained as direct contact with potential buyers would be needed for this information.

8.0 Mare Milking Breeds

Apparently, the success of horse milking is attributable to the breed of horse. While several breeds are utilized, they are generally characterized by good musculature. Several Russian and German breeds exist which are suitable for this purpose. The suitability of existing breeds in Saskatchewan for milk production would have to be further explored.

9.0 Feasibility in Saskatchewan

Commercial milking of mares in Saskatchewan is possible; however a sizeable number of mares would be required to make this profitable. Existing PMU operations are ideal candidates. Normal PMU operations put the mares out to pasture for the summer. It may be possible to capitalize on this and put the mares to work giving milk for commercial use. Milking could be performed after the foals are 6 weeks of age. Diet could be supplemented with creep feed and could replace mare's milk with Folac if necessary.

Tannis Benett is a Saskatchewan PMU operator who has expressed an interest in milking mares. She mentioned that others in the area would probably be interested, if the economic returns were adequate.

9.1 Potential Problems

A potential problem with the above type of operation is that it could be tiring on a mare and thus she could be prone to break down. Dr. Patterson mentioned that with the proper breed and/or horse, it could be done. Two issues have to be addressed.

- Good management capability is a necessity to run this type of operation efficiently and effectively and to keep animal rights activists satisfied.
- A labour force willing to do the work at a reasonable cost must be found.

10.0 Conclusion and Recommendation

This document has attempted to bring into focus all of the relevant information pertaining to the current status of mare's milk, including it's use and production. Not all of the information has been collected and thus there are still a few issues outstanding (please see Appendix C for further information). Generally speaking, what is needed at this point is further marketing information.

Recommendations include the following:

- Keep a watchful eye out for potential Koumiss markets. These markets may exist but at the same time may need time to develop.
- Mare's milk as a cow's milk replacement *may* find a niche in Canada. However, consumer awareness would have to be stimulated and test marketing would likely have to be performed.
- The area of cosmetics looks unpromising and should not be further pursued.

In the author's opinion, steps to take regarding further research include:

- Handing this project over to another student so that he/she will be prepared to act on any information which is still pending.
- Contacting the Austrian Consulate to find the name of the company which has recently expressed an interest in markets for Koumiss in Canada. At the same time, look into export possibilities for raw mare's milk.
- Considering the possibility of sending someone on the expedition to the health food trade show in Stutgarde, West Germany in the summer of 1993.

- Looking into the possibility of setting up a small test market for Koumiss. Samples could be imported from West Germany or Austria for this purpose.

- Staying in touch with Frank Lucchetta of C. E. Jamieson, Tannis Benett in Grenfell and Bill Reynolds of the Canadian Health Food Association.

Reference List

1. Lang, Francis. *Horses Are Kept For Milk Production.* Heavy Horse & Driving, Winter 1978, p63-65.

2. *Kefir and Koumiss.* Dairy Industries International, September 1989, 54(9).

3. Dunn, Norman, and Rainer Mache. *What's A Horse Doing In The Milking Parlour?* The Furrow, pg30.

4. *Pregnant Mares Urine Feasibility Study.* ACS (Agricultural Credit Corporation of Saskatchewan. Authors Edward Knopf - Senior Research Analyst and Kirk Wall - Junior Research Analyst. January 1992.

5. Dr. N. Roos, Prof. C. A. Barth, Federal Agency for Milk Research, Germany

6. Prof. Sverre Tollersrud, Department of Physiology and Nutrition, Norwegian College of Veterinary Medicine.

7. Sist, M. D., Williams, J. F., Geary, A. M., *Pregnancy Diagnosis in the Mare by Immunoassay of Estrone Sulfate in Serum and Milk.*, Journal of Equine Veterinary Science 1987. 7(1): 20-23 (21 ref.)

Appendix A: Research Notes

Canadian Federal Government

Contact: Dr. Bardoff
Institute: Agriculture Canada
Phone: 780-5212

Dr. Bardoff said that Russian horses in particular are susceptible to carrying diseases (low disease protocol).

Horses are certified in the country where the horse is obtained. Results are passed along to the appropriate Canadian authority. Depending on the horse, it may have to go into quarantine for a period of 30 days upon arrival into Canada. The animal is further tested and if fails, it destroyed without compensation.

Quarantine centers are located in Edmonton and Quebec. Total cost to bring a horse into Canada is approx. $5000-$10000 (including testing, shipping etc.) Prices for quarantining is $25/day. Much easier to get horses from Canada to Russia.

Contact: Dr. Norman Pound, Stan Twardowski
Institute: Health & Welfare Canada, Pharmaceutical Assessment and Cosmetics Division
Phone: (613)954-1254

According to Dr. Pound, mare's milk is not allowed in Canadian cosmetic products; not even trace amounts. They rely on the manufacturer for product information. If they are sceptical, they will do some testing. Dr. Pound said it would be hard to detect trace amounts. Would not be safe to introduce such a product in Canada. Would be like going 55 in a 50 zone and taking chances you might not get caught. If manufacturer claimed 0 oestrogen content, could use; but why? Even if you could bring into Canada, could not make claims -> what use would that be?

Dr. Pound very sceptical about use of mare's milk; he doesn't think it would do any good. As for pharmaceuticals, he has never seen it used for that purpose. If oestrogen levels low, may be classified as non-medicinal; otherwise considered a drug (medicinal purposes).

In the area of foods, mare's milk can be consumed; however, you can't make medicinal claims - it would then kick into the drug category. There are strict regulations on labelling. He mentioned of problems with hormones such as androgen; he recalled a case where a mother was taking a health food which contained androgens. Her baby was born with a beard.

Contact: Ron Burke
Institute: Health & Welfare Canada, Food Division
Phone: (613)957-1750

Indicated that there are no specific regulations regarding use of mare's milk in food products.

Contact: Elizabeth Rafew
Institute: Health & Welfare Canada, Drug Regulatory Affairs
Phone: (613)957-0372

Secretary indicated I should phone Dr. Norman Pound

Contact: Hugh Harries
Institute: Health & Welfare Canada
Phone: 780-5407

Canadian Private

Contact: Patrick Lecavalier, Jerry Klassen
Institute: Alpha Laval Head Office
Phone: (705)741-3100
Fax: (705)741-3150

Spoke to Jerry Klassen. Will fax info regarding milking equipment in Holland and West Germany.

Contact: Tannis Benett
Institute: PMU Operator
Phone: 697-3217

Institute: Plainsman Dairy Equipment (Serge)
Phone: 721-6844

Indicated they have no knowledge regarding mare milking equipment

Contact: Bob Jones
Institute: Midcan Livestock (Alpha Laval)
Phone: 781-2333

Alpha Laval of Peterborough, Ont. replied via fax indicating that mare milking equipment is currently experimental in Holland and Germany. They mentioned a few problems:

1) No inflations on the market
2) No recommendations on vacuum levels and pulsation rates.
3) What to do with the colt.

They said that in a couple of years they may have a simple product line.

Contact: Barb Shea, Pharmacist
Phone: 586-6262 Monday to Tuesday
781-3301 Wednesday, Thursday, Friday

Contact: Etienne von Engelhardt
Institute: Sask Labour; 3rd floor, 1914 Hamilton
Phone: 787-1298

Etienne mentioned that there is a riding academy in the Okanogan (summer resort) which breeds the horses used for milking purposes in West Germany. Apparently, the success of horse milking is attributable to the breed of horse. Successful breed (in Germany) resembles that of a Shetland; those that are normally raised for recreational purposes.

Contact: Dr. Blackburn
Institute: College of Pharmacy, U of S
Phone: 966-6327

Indicated that mare's milk is not used in pharmaceuticals as far as he is aware. It would serve no specific purpose.

Institute: Ayerst Organics Ltd. - Brandon, MB.
Phone: (204)728-1511

Contact: Nadia Cymbaluk
Institute: Animal Sciences, U of S
Phone: 966-4170

Contact:	Dr. Laarveld
Institute:	Animal Sciences, U of S
Phone:	966-4160

Contact: Dr. Anne Graham (Dermatologist) - Regina

She mentioned mare's milk as a moisturizer; however, she believes the product to be mostly a gimmick. Mare's milk contains weak lactic acid. Apparently, the problem with mare's milk is that it sits on the surface of the skin. Dr. Graham was not aware of an appropriate vehicle (mare's milk is made of large molecules) to carry the product deeper into the skin. She mentioned three alternatives that cosmetic companies are using to achieve the same (and much improved) results. These three are:

1) Alpha Hydroxyl Acid
2) Lactic Acid; need prescription in the United States
3) Glycolic Acids

All three are seen as good moisturizers and can be carried to deeper layers with a vehicle. She was very sceptical of mare's milk use in cosmetics (can be used for some scalp conditions however, side effects can result) and pharmaceuticals. I asked her if it was the oestrogen content. She said that it might be to some extent but if it was the oestrogen sought, why not just buy a tube of PMU cream.

Canadian Health Food

Contact:	Frank Lucchetta
Institute:	C.E. Jameison
Phone:	(519)969-7630
	(416)960-0052 Frank Lucchetta

They do not use mare's milk in any of their products; however, they did say they might be interested. They want us to send an information package to them:

Frank Lucchetta
C. E. Jamieson
Director of Marketing
2 Saint Claire Ave. West
Toronto, Ontario
M4V 1L5

Pediatrics

Contact: John C. Gerrard, Pediatrician
Phone: 653-3631

Mentioned that currently, there are plenty of substitutes for allergy sufferers such as goats milk and soy milk. He said there was a possibility that mare's milk could be an acceptable substitute; however, research would have to be done. He advised not to bother looking into it.

Contact: Dr. Wade T.A. Watson (pediatric allergist)
Institute: Health Sciences Centre, Childrens' Hospital (Winnipeg)
Phone: (204)787-2455

He indicated his lack of understanding of mare's milk. He said that goats' milk is often used as a substitute; however, even goats' milk doesn't work in all cases. He also said there would also most likely be a reluctancy to try the new product. However, he was going to check and see if there was any literature regarding the product and would get back to me if he found anything.

Canadian Associations

Institute: Canadian Cosmetics and Toiletries Association (CCTFA)
Phone: (416)629-0111

Indicated that they have no knowledge of mare's milk. They are not responsible for approval of cosmetic ingredients for Canadian cosmetic products.

Contact: Francois Schubert
Institute: Sandos Canada
Phone: (514)631-6775

Contact: Robert, Judy Erola
Institute: Pharmaceutical Manufacturer's Association of Canada
Address: 302-1111 Prince of Whales Dr. Ottawa, Ont. K2Z 3T2
Phone: (613)727-1380
(613)727-1384
Fax: (613)727-1407

Robert responded that he had no knowledge regarding the use of mare's milk in either prescription or non-prescription drugs.

Contact:	Bill Reynolds, Executive Director
Institute:	Canadian Health Food Association - Vancouver
Phone:	(604)731-4664

Contact:	Sylvia or Lou Vogel
Institute:	Trans Canaderm Inc.
Phone:	(514)334-3830

Sylvia said she was not aware of the product's use; will look into it and get back to me if she finds anything.

Canadian Provincial

Contact:	Debbie Hobstein
Institute:	Sask Ag & Food Livestock Branch - Veterinary lab
Phone:	787-6457

Contact:	Dr. Marshall Paterson
Institute:	Sask Ag & Food Livestock Branch
Phone:	787-4687

Contact:	Tim Marshall
Institute:	Economic Development
Phone:	787-2191

United States Federal

Institute:	FDA
Phone:	(301)443-1544

Contact:	Allan Hopper
Institute:	FDA, U.S. Food/Cosmetic Regulation
Phone:	(202)205-5233

Indicated that oestrogen-based products would be classified as prescription drugs.

Contact:	Jim Summers
Institute:	FDA, Centre for Foods
Phone:	(202)485-0233

Indicated there are no specific regulations. If the product has not been used before it must be tested. This can happen in one of three ways:

1. Do your own analysis; Centre for Foods will require any results you obtain
2. Experts; scientific information
3. Agency (Centre for Foods) reviewed product

Contact: Jackie Knight
Institute: FDA, Centre for Drugs
Phone: (301)443-2544
(301)443-2544 Jackie Knight

Told me to try the Drug Review Division and speak to John Short.

Contact: John Short (Supervisor Safety Officer)
Institute: FDA, Drug Review Division
Phone: (301)443-3510

Said that he was unaware of mare's milk for use in pharmaceutical products. Can be used in foods as long as no medicinal reference was made. If that was the case, a claim to the FDA for drug approval would have to be made. None made as of yet.

Institute: U.S. Dept of Health Human Services
Phone: (202)619-0257/443-3170

Institute: National Dairy Counsil
Phone: (708)803-2000

United States State Government

Institute: Winconsin Department of Agriculture
Phone: (608)266-7175

United States Private

Institute: Wisconsin Milk Marketing Board
Phone: (608)836-8820

Contact: John Robinson
Institute: CNN Library Tape Sales Office
Address: PO Box 105366 Atlanta, Georgia 30348
Phone: (404)827-1335 John Robinson
(404)827-1840 Fax
(404)827-1800 CNN Head Office

Institute: Colorado Horse Rescue
Phone: (303)423-9433

They are essentially a horse hospital for battered horses. It is a volunteer organization located in Weightwrench, CO. They indicated that they have an occasional need for mare's milk but they have adequate supplies. They also use a product called Folac. It is a powdered substance which is added to water they fed to the foals. They indicated that this product is well accepted by the foals.

United States Associations

Contact: Richard Meyers
Institute: National Nutritional Foods Association (NNFA)
Phone: (714)966-6632

Said to contact trade journals.

Contact: Wilburt
Institute: U.S. Cosmetic Ingredient Review (funded by the CTFA)
Phone: (202)331-0651

Could not help us with our questions. Directed us to the CTFA.

Institute: CTFA (Cosmetic Toiletries and Fragrances Association)
Phone: (202)331-1770

United States Trade Journals

Institute: Health Foods Business
Phone: (908)353-7373

Institute: Food Distributor Magazine
Phone: (813)443-2723

Had no knowledge of mare's milk. Said to call the National Dairy Counsel.

Contact: Monica Arnold
Institute: Natural Foods Merchandiser
Phone: (303)939-8440

United States Natural Cosmetic Companies

Institute: J-M Pharmacal Company
Address: 251 E Hacienda Ave
Campbell, CA 95008 USA
Phone: 800/538-4545

Producers of natural skin care products, including acylglutamate, mink oil, procollagen and sloughing grains. Call for information.

Indicated they do not use mare's milk; never heard of it.

Institute: Reviva Labs
Address: 705 Hopkins Rd
Haddonfield, NJ 08033 USA
Phone: 800/257-7774

Producers of Intercell Products: Hand and Body Lotion, Day Cream, Night Gel, Lotion for Oily Skin. Ask for nearest retailer.

Institute: Mill Creek Natural Products
Address: Novato, CA 94949
Phone: (415)382-4000

Never heard of mare's milk. They said that sugars and sorbitols are used as moisturizers as alternatives.

Contact: Delia (Cosmetic Chemist)
Institute: Nature's Gate Herbal Cosmetics
Address: Chatsworth, CA 91311
Phone: (1-800)327-2012
Fax: (818)341-3840

United States Cosmetic Companies

Institute: NuSkin International (Regular/Natural Cosmetics)
Phone: (801)345-1000

Said to call Brooks Industries (supplier)

Institute: Brooks Industries (supplier)
Phone: (908)561-5200
Fax: (908)561-9174

Brooks has never heard of mare's milk. Said they use Aloe Vera, Sorbitols, Jojoba etc. as replacements. Sceptical that the CTFA would allow a product with oestrogen. Mentioned big market for Avian Collagen.

Institute: Young, E F, JR, Manufacturing CO
Address: 425-G 26 Ave
MS: Meridian 39301
Phone: (601)693-1961

Hair conditioners and relaxers, hand lotions, cold creams and skin softeners

Institute: Noyes, P J, Co. Inc.
Address: Whitefield Rd, Box 381-G
NH: Lancaster 03584
Phone: (603)788-4952

Creams, lotions; Consumer, Inst'l, Pvt. Label, Bulk

Institute: Beiersdorf, Inc.
Address: Duke Place, P.O. Box 5529
CT: South Norwalk 06856
Phone: (203)853-8008

Creams, Lotions

Indicated that they do not use (or have even heard of) the product and they never intend on using it. In fact, they said their new policy is to stay away from animal ingredients all together.

United States Health Food Companies

Institute: Long Life Dairy Products (Jacksonville Florida)
Phone: (904)354-8256

Do not use mare's milk.

Institute: Mountain High Yoghurt (Englewood Colorado)
Phone: (303)761-2210

Do not use mare's milk.

Appendix B: Research Prior to May 4, 1992

- Contacted 6 German cosmetic companies; no responses received. However, a response was received from an Austrian cosmetic company. They mentioned that they did not use mare's milk in any of their cosmetic products nor did they know of any use by their competitors. They were aware however, of some farms in Austria producing and selling mare's milk as a healthy drink and food stuff.

- Sverre Tollersrud, a professor of the Norwegian College of Veterinary Medicine was contacted regarding questions pertaining to oestrogen and mare's milk. He responded indicating his lack of knowledge regarding mare's milk for commercial use. He did however, outline a few interesting facts about the oestrogen content of mare's milk.

- Mr. Norman Dunn, the author of "What's A Horse Doing In The Milking Parlour?" was contacted. Rollie Henkes (Furrow Magazine) replied they have no further information on the business of milking mares other than what was in the article. He did return the address of the farmer (Ulf Helmich) featured however. No reply was ever received from Ulf Helmich.

- A copy of the Cosmetic Regulations of the Food and Drug act was obtained. Section 15(b) stated that "No manufacturer or importer shall sell a cosmetic that contains an oestrogenic substance." As of May 5, 1992 this is still in effect.

- Stephen Rung from the Commercial Section at the Canadian Embassy in West Germany was contacted. He replied giving the addresses of the German Association of Natural Products and Natural Food Products and also the relevant Association of Importers and Wholesalers. Letters to both of these organizations was sent; no response received.

- Five publication companies (ie Dairy Industries International) obtained from the European food marketing directory were contacted; no response.

- Received reply from the German Federal Agency for Milk Research. Obtained a list of 4 breeding farms that produce mare's milk and who offer mare's milk based cosmetic products. In addition, there was also some general information about mare's milk (ie. uses, oestrogen content).

Appendix C: Pending Responses

- Waiting on reply from Jerry Klassen of Alpha Laval in Montreal regarding further information on mare milking equipment; specifically, I inquired about prices and the reason for the experimental mare milking equipment.

- Letters were sent to four different German mare milking producers who also manufacture cosmetics

- Letter sent to Fennochem Oy requesting information regarding desired PMU quantities and prices

- Re-sent fax to the Association of Importers and Wholesalers.